

said mobile station and receiving a response to said location signal from said mobile station by said fixed transmitting station,

using a relay station (**MSN1 - MSN5**) which is adapted to receive said location signal from the corresponding fixed transmitting station and said response from said mobile station, and to forward said signals to said mobile station (**MS1**) and said fixed transmitting station, respectively, in case a direct transmission from or to one or more of said fixed transmitting stations (**BS1, BS2, BS3**) is not available,

determining the position of said relay station (**MSN1 - MSN5**),

determining the distance between said target mobile station (**MS1**) to the fixed transmitting stations and/or the relay stations on the basis of said location signal, and

locating the position of said target mobile station on the basis of the determined distances.

22. (NEW) The method according to claim 21, wherein said relay station (**MSN1 - MSN5**) is a movable mobile station.

23. (NEW) The method according to claim 22, wherein a distance **D** (**D1, D2, D3**) between said relay station and said target mobile station is calculated based on the following equation:

$$D = c\Delta t + \beta d_{\max},$$

wherein **c** is the light velocity, Δt is the propagation delay of the location signal, β is in a range from -1 to +1, and d_{\max} is the maximum distance by which the relay station can move during Δt .

24. (NEW) The method according to claim 23, wherein said distance d_{\max} is determined by the following equation:

$$d_{\max} = v_{\max}\Delta t + e,$$

wherein v_{\max} is the maximum velocity of the relay station and **e** is a measurement error.

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25. (NEW) The method according to claim 21, comprising the step of judging whether a request for a location of said target mobile station is authorized or not.

26. (NEW) The method according to claim 25, wherein for said judging step subscriber data of a data base (HLR) are used.

27. (NEW) The method according to claim 21, comprising the step of synchronizing said base stations and said mobile stations involved in the positioning before performing said locating step.

28. (NEW) The method according to claim 21, wherein the calculation of the location of said target mobile station is performed on the basis of any positioning method based on radio wave propagation data.

29. (NEW) The method according to claim 28, wherein said positioning method based on radio wave propagation data is one of TDOA, TOA or TA.

30. (NEW) The method according to claim 21, wherein said method is carried out in a WCDMA network.

31. (NEW) The method according to claim 21, wherein each positioning request is provided with a priority level and in case of a plurality of simultaneous positioning request, the positioning requests are processed in dependence on the priority level.

32. (NEW) The method according to claim 21, wherein Opportunity Driven Multiple Access (ODMA) is used as a protocol for transmitting said location and response signals via said relay station.

33. (NEW) A radio network of a mobile telecommunication system, comprising transmitting stations (**BS1, BS2, BS3**) which are adapted for positioning a target mobile station (**MS1**) by transmitting a location signal from each fixed transmitting station to said mobile station and receiving a response to said location signal from said mobile station by said fixed transmitting station,

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at least one relay station (**MSN1 - MSN5**) which is adapted to receive said location signal from the corresponding fixed transmitting station and said response from said mobile station, and to forward said signals to said target mobile station (**MS1**) and said fixed transmitting station, respectively, in case a direct transmission from and to one or more of said fixed transmitting stations (**BS1, BS2, BS3**) is not available, and

a means which is adapted to determine the position of the relay station (**MSN1 - MSN5**) and to determine the distance between said target mobile station (**MS1**) to the fixed transmitting stations and/or the relay stations on the basis of said location signal, and

which is adapted to locate the position of said target mobile station on the basis of the determined distances.

34. (NEW) The radio network according to claim 33, wherein said determination and location means is a mobile location center (**GMLC**).

35. (NEW) The radio network according to claim 33, wherein said relay station (**MSN1 - MSN5**) is a movable mobile station.

36. (NEW) The radio network according to claim 35, wherein said determination means calculates said distance D (**D1, D2, D3**) between said relay station and said target mobile station based on the following equation:

$$D = c\Delta t + \beta d_{\max},$$

wherein c is the light velocity, Δt is the propagation delay of the location signal, β is in a range from -1 to +1, and d_{\max} is the maximum distance by which the relay station can move during Δt .

37. (NEW) The radio network according to claim 36, wherein said distance d_{\max} is determined by the following equation:

$$d_{\max} = v_{\max}\Delta t + e,$$

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wherein v_{max} is the maximum velocity of the relay station and e is a measurement error.

38. (NEW) The radio network according to claim 34, wherein said mobile location center (**GMLC**) is further adapted to judge whether a request for a location of said target mobile station is authorized or not.

39. (NEW) The radio network according to claim 38, wherein said mobile location center (**GMLC**) is adapted to use subscriber data of a data base (**HLR**) are used.

40. (NEW) The radio network according to any one of the claims 33, wherein said radio network is a WCDMA network.

41. (NEW) The radio network according to any one of the claims 33, wherein each positioning request is provided with a priority level and in case of a plurality of simultaneous positioning request, said mobile location center (**GMLC**) is adapted to process the positioning requests in dependence on the priority level.

42. (NEW) The radio network according to claim 33, wherein Opportunity Driven Multiple Access (ODMA) is used as a protocol for transmitting said location signals via said relay station.

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